MSW-II Subwoofer

MODULUS® II HOME THEATER SYSTEM

SERVICE MANUAL

Infinity Systems, Inc.
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Basic Specifications
Modulus MSW-II Powered Subwoofer

Frequency Range:	27Hz – 100Hz (±3dB)
Amplifier Output:	300 watts RMS, 600 watts peak
Low-Frequency Driver:	12" C.M.M.D.,magnetically shielded
Crossover Frequency:	100 Hz (12 dB per octave)
Dimensions (H x W x D):	16-1/2" x 14-1/2" x 18-1/8"
	(419mm x 368mm x 460mm)
Weight:	44 lb (20 kg)

Infinity continually strives to update and improve existing products, as well as create new ones. The specifications and construction details in this and related Infinity publications are therefore subject to change without notice.

Modulus subwoofer MSW- II 300W Powered Sub/ Plate Amp

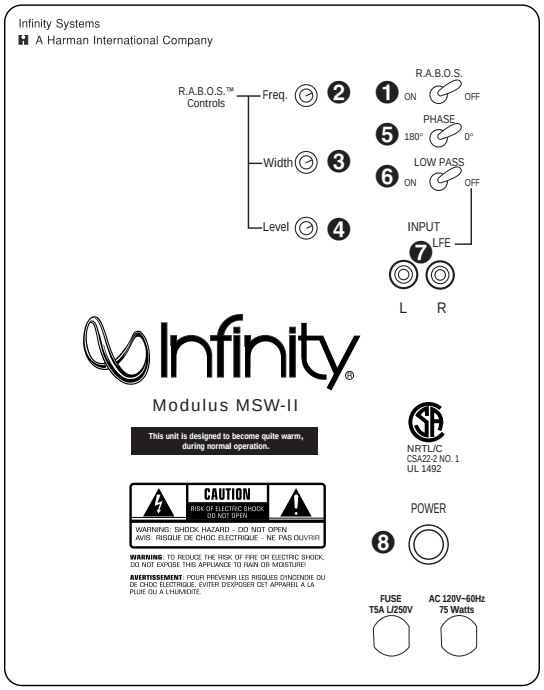
LINE VOLTAGE	Yes/No	Hi/Lo Line	Nom.	Unit	Notes
US 120vac/60Hz	Yes	108-132	120	Vrms	Normal Operation
EU 230vac/50-60Hz	Yes	207-264	230	Vrms	Normal operation, MOMS required

Parameter	Specification	Unit	QA Test Limits	Conditions	Notes
Amp Section					
Type (Class AB, D, other)	D	---			
Load Impedance (speaker)	4	Ohms		Nominal	Z-curve required
Rated Output Power	300	Watts		Regulated 120 V line	
THD@ Rated Power	1	%		22k filter, 50Hz	300W
THD @ 1 Watt	0.2	%		22k filter, 50Hz	
DC Offset	undefined	mV-DC	< 20	@ Speaker Outputs	
Damping factor	20	N/A	> 15		measured at 50 Hz
Input Sensitivity					
Line/Hi Level Input Phase	N/A				
Line Input	400	mVrms		300 W @ 50Hz	1 input driven
Signal to Noise					
SNR-A-Weighted	100	dBA		relative to rated power	A-Weighting filter
SNR-unweighted	70	dBr		relative to rated power	22k filter
SNR rel. 1W-unweighted	60	dBr		relative to 1W Output	22k filter
Residual Noise Floor	2	mVrms		Volume @max, using RMS reading DMM/VOM (or A/P)	
Residual Noise Floor	1	mVrms(max)		Volume @max, w/ A/P Swept Bandpass Measurement (Line freq.+ harmonics)	
Input Impedance					
Line Input	5 k	ohms		Nominal	
Active Filters					
Low Pass (fixed or variable)	FIXED	--			
Frequency	100	Hz			
Slope	24	dB/Octave			
Q	Butterworth	Damping			
Subsonic filter (HPF)	fixed	--			
Frequency	20 - 35	Hz			
Slope	12	dB/Octave			
Q	0.5 - 2.5	Damping			
Friend Circuit	FIXED	--			
Frequency	62.7 Hz	Hz		notch filter	
Slope	12	dB/Octave			
Q	2.5	Damping			
Special filter	RABOS	--			
Switches					
Main Power On/Off Switch	YES	--			
Type	push-button	--		Located on amp plate	
RABOS on/off	YES	--			
Type	mini toggle	--			
Polarity Switch	YES	--		"Off": 0°; "On": 180°	
Type	mini toggle	--		Locate at amp plate	
Low Pass on/off	YES				
Type	mini toggle	--		Locate at amp plate	
Limiter (yes/no)	YES				compressor and limiter
THD at Max. Output Power	less than 2	%		Maximum Output Power	Maximum THD as a result of limiting.
Output Volume Control					
Volume Control Pot	YES	--		harness for pot and LED to be remotely mounted	
Taper (lin/log)	log A taoer	--			
@ minimum setting	no output				
Input/Output Configuration					
Line In (L,C,R,AC3,Mono)	Stereo	--		RCA phono jack, gold plated	
LFE In	YES	--		Shared with "R" Line In jack	
Hi Level Out	YES	--			
Signal Sensing (ATO)					
Auto-Turn-On (yes/no)	YES	--			
ATO Input Test Frequency	100	Hz			
ATO Input Threshold	2	mV	typ.		LPF "On", BOS "Off"
ATO Low Pass cutoff	400	Hz	450	ATO-LPF for noise immunity	LPF "On", BOS "Off"
ATO Turn-on time	1	ms	10	Amp connected and AC on, then input signal applied (1 W output)	
Auto Mute / Turn-OFF Time	10	minutes	5 < t < 15	Time before muting, after signal is removed	

Power on Features					
Power on Delay time	greater than 2	sec.		AC Power Applied	
Power on LED	YES	--		Bi-color LED located adjacent to volume control knob	
Normal On/Off	green / red	color		ATO mode only	
ATO	--	color		"Active": green; "Standby": red	
Transients/Pops					
ATO Transient	5	mV-peak		@ Speaker Outputs	
Turn-on Transient	30	mV-peak		@ Speaker Outputs	AC Line cycled from OFF to ON
Turn-off Transient	30	mV-peak		@ Speaker Outputs	AC Line cycled from ON to OFF
Efficiency					
Stand-by Input Power	12	Watts	typ.	@ nom. line voltage	
AC Power Cons.@1W	13	Watts	typ.	@ nom. line voltage	
Power Cons.@rated power	375	Watts	typ.	@ nom. line voltage	Input power measured is REAL Watts, not VA
Efficiency	70	%	typ.	@ nom. line voltage	
Protection					
Short Circuit Protection	YES	--		Direct short at output	
Thermal Protection	YES	--		threshold ~ 65 deg. C at panel	
DC Offset Protection	YES	--		DC present at Speaker Out lead	Relay for driver/fire protection
Line Fuse Rating (120 V)	3.15	Amps		Type ADL or MDL	Panel mount fuse holder

Subwoofer Controls

Rear Panel



Front Panel

❶ R.A.B.O.S. On/Off Switch

❷ Center-Frequency Adjustment

❸ Bandwidth Adjustment

❹ R.A.B.O.S. Level

Room Adaptive Bass Optimization System (R.A.B.O.S.) Controls

❺ Phase Switch

❻ Low-Pass Filter Selector

❼ Line-Level Inputs

❽ Power Switch

❾ Subwoofer Level Control

A Few Suggestions

We recommend that you do not operate your speakers or subwoofer with the bass, treble and loudness controls set to full boost. This will place undue strain on your electronics and speakers and could damage them.

The volume control setting on your processor/preamp or receiver is not a specific indication of the overall loudness level of the speakers. The only important consideration is the loudness level at which the system can be played, regardless of where the volume control is set.

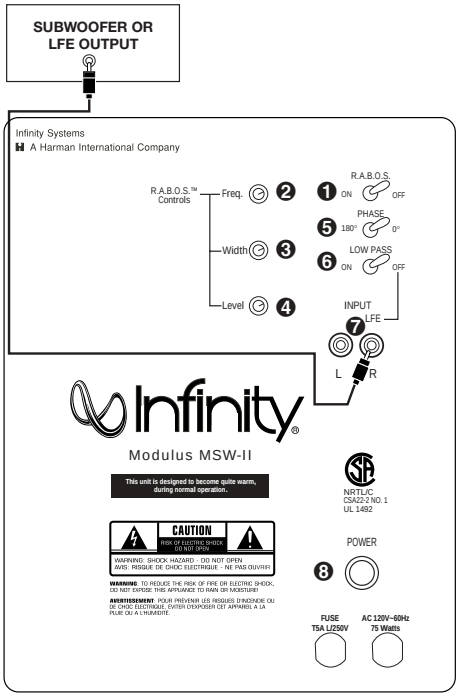
Always turn down the volume control setting on your processor/preamp or receiver when changing a cassette or CD, or switching inputs to AM or FM operation. Excessively loud transients (clicks or popping sounds) can damage the satellite speakers and possibly the subwoofer.

Important!

Whenever changing cables, pulling plugs, etc., ALWAYS TURN OFF ALL EQUIPMENT, including the subwoofer. This prevents transients from entering the speakers and prevents electrical energy from reaching you. Keep all connections out of the reach of children.

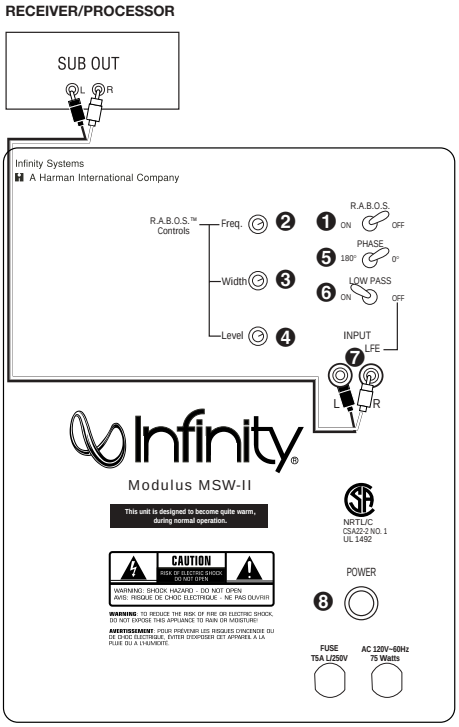
SUBWOOFER CONNECTIONS

If you have a Dolby* Digital or DTS® receiver/processor with a low-frequency-effects (LFE) output:



- Set Low-Pass Filter ❻ to "Off."

If your receiver/processor has subwoofer outputs for the left and right channels:



- Set Low-Pass Filter ❻ to "On."

OPERATION

Surround Modes

When using the Modulus II system in a Dolby Pro Logic* home theater system, make sure the receiver's center channel mode is set to "Normal." When using the Modulus II system in a Dolby Digital or DTS home theater system, make sure the receiver's speaker modes are set to "Small."

Some Dolby Digital-equipped receivers/processors offer different setup options for each source or surround mode: e.g., CD-stereo, videotape, Dolby, Pro Logic. In each case, follow your equipment's instructions to ensure that the subwoofer output is turned on and that the speakers are set to "Small" in each mode.

Power On

Plug your Modulus II subwoofer's AC cord into a wall outlet. Do not use the outlets on the back of the receiver.

Initially set the subwoofer's Level Control ❾ to the "O" position.

Turn on your sub with the Power Button ❽ on the rear panel.

Auto On/Standby

With the Power Button ❽ in the ON position, the Level Control ❾ on the front panel will remain backlit in red or green to indicate the On/Standby mode of the subwoofer.

RED = STANDBY (No signal detected, Amp Off)

GREEN = ON (Signal detected, Amp On)

The subwoofer will automatically enter the Standby mode after approximately 10 minutes when no signal is detected from your system. The subwoofer will then power ON instantly when a signal is detected. During periods of normal use the Power Button ❽ can be left on. You may turn off the Power Button ❽ during extended periods of nonoperation: e.g., when you are away on vacation.

Adjust Level

Turn on your entire audio system and start a CD or movie soundtrack at a moderate level. Turn your subwoofer's Level Control ❾ up to the "5" position (half way). If no sound emanates from the subwoofer, check the AC-line cord and input cables. Are the connectors on the cables making proper contact? Is the AC plug connected to a "live" receptacle? Has the Power Button ❽ been pressed to the "On" position? (Note: The Level Control ❾ on the front panel will turn green when the power is on.) Once you have confirmed that the subwoofer is active, proceed by playing a sound source. Use a selection that has ample bass information.

Set the overall volume control of the preamplifier or stereo to a comfortable level. Adjust the subwoofer's Level Control ❾ until you obtain a pleasing blend of bass. Bass response should not overpower the room but rather be adjusted so there is a harmonious blend across the entire musical range. Many users have a tendency to set the subwoofer volume too loud, adhering to the belief that a subwoofer is there to produce lots of bass. This is not entirely true. A subwoofer is there to enhance bass, extending the response of the entire system so the bass can be felt as well as heard. However, overall balance must be maintained or the music will not sound natural. An experienced listener will set the volume of the subwoofer so its impact on bass response is always there but is never obtrusive.

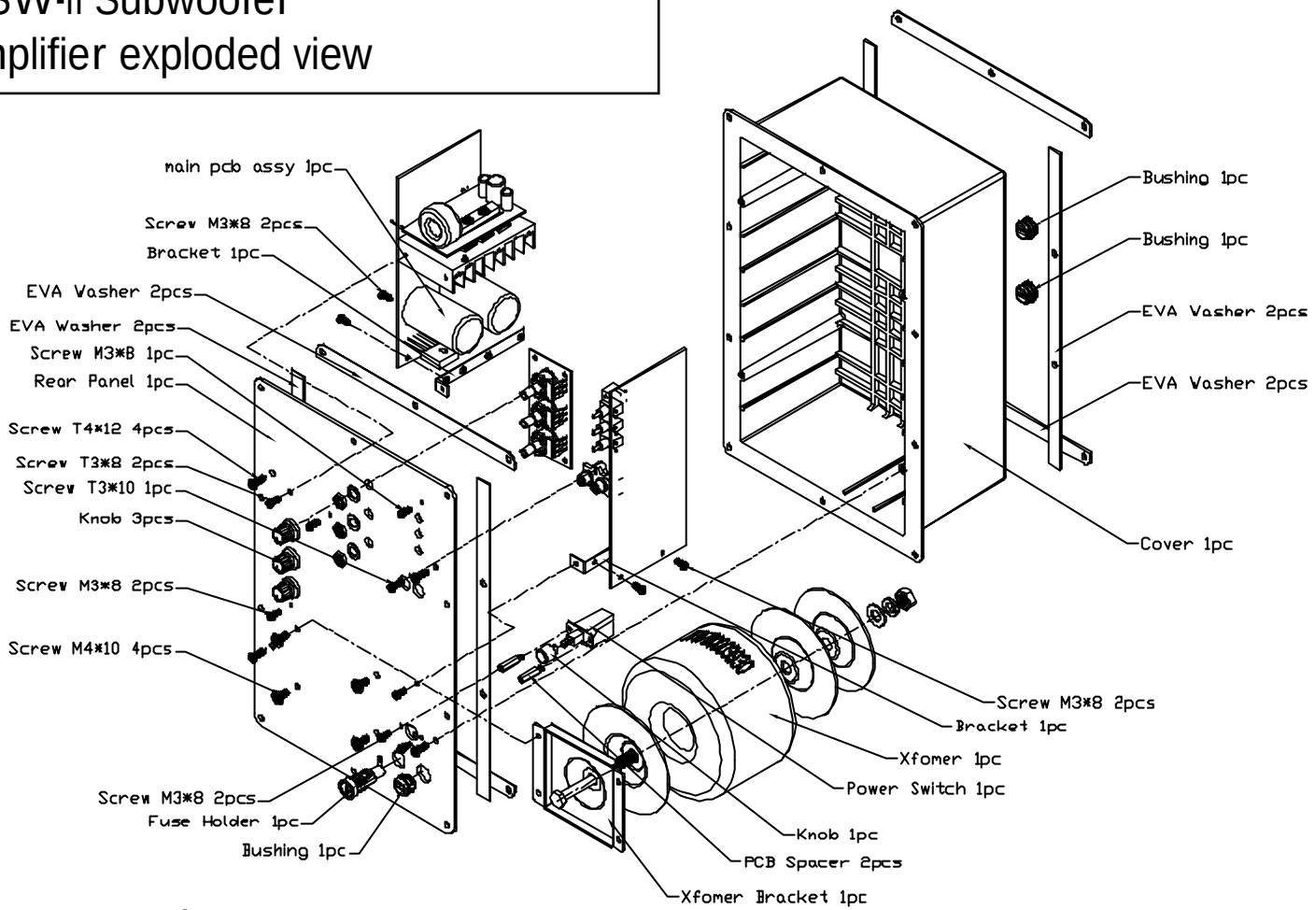
Phase Control

The Phase Switch ❺ determines whether the subwoofer speaker's piston-like action moves in and out with the main speakers, 0°, or opposite the main speakers, 180°. Proper phase adjustment depends on several variables such as room size, subwoofer placement and listener position. Adjust the phase switch to maximize bass output at the listening position.

Final Positioning

After correctly connecting the Modulus II system and verifying that both the subwoofer and all satellite speakers are playing, it is time to optimize the system for your particular listening room. Earlier, you placed the subwoofer in its general location. Finding the exact location for optimum performance sometimes only involves moving the speakers up to a few inches in any direction. We urge you, therefore, to experiment with placement, if possible, until your speakers deliver their full potential.

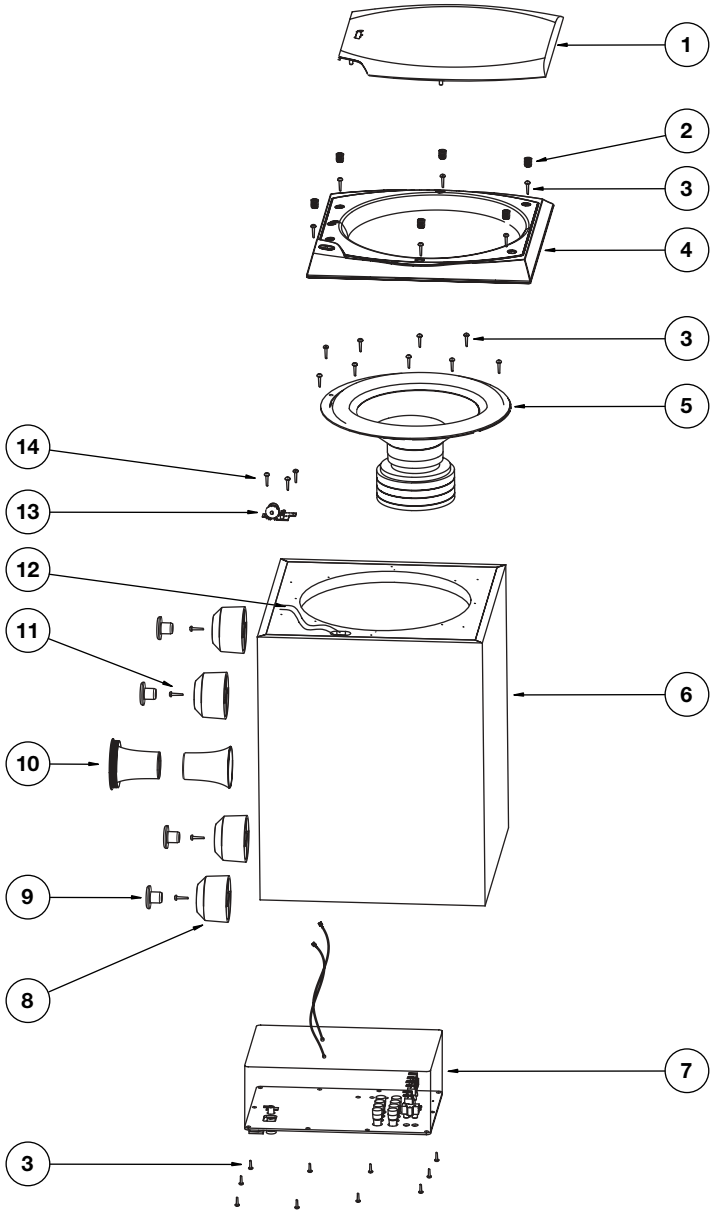
MSW-II Subwoofer amplifier exploded view



(Refer to page 13 for part numbers)

MSW-II Subwoofer

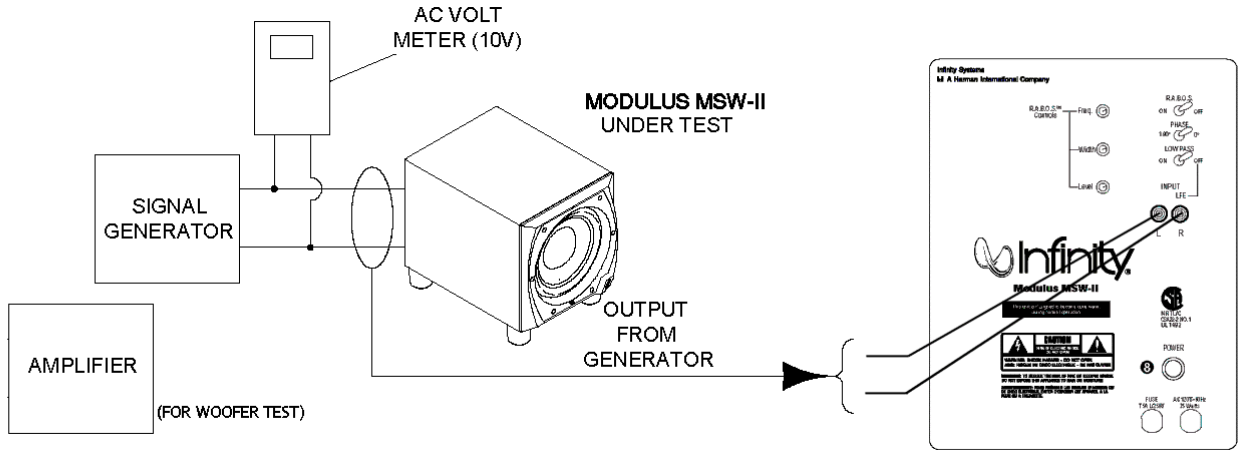
EXPLODED VIEW



ITEM NO.	DESCRIPTION	QTY.	PART NO.
1.	GRILLE (CHARCOAL)	1	244-120-00268-0YA
	(PLATINUM)		244-120-00268G
2.	GRILLE CUP (Charcoal)	4	327-RUB-00112B
	(Platinum)		327-RUB-00112W
3.	WOOFER/AMPLIFIER/BAFFLE SCREWS	25	352-FM04020D605
4.	FRONT BAFFLE (Charcoal)	1	243-120-00399B
	(Platinum)	1	243-120-00399W
5.	12" WOOFER C.M.M.D.,SHIELDED, DCR = 3.5Ω ±10%	1	30PR14BW-DW01
6.	MSW-II SUBWOOFER CABINET (CHARCOAL OR PLATINUM)	1	Not for Sale

ITEM NO.	DESCRIPTION	QTY.	PART NO.
7.	AMPLIFIER ASSEMBLY	1	Not for Sale
8.	FOOT (Charcoal)	4	320-ABS-00193B
	(Platinum)	4	320-ABS-00193W
9.	FOOT PAD (Charcoal)	4	320-RUB-00192B
	(Platinum)	4	320-RUB-00192W
10.	PORT TUBE	1	249-ABS-00158
11.	FOOT SCREW	4	352-HM05025D606
12.	WIRING HARNESS (AMP-LEVEL POT)	1	165-50400HH4
13.	LEVEL CONTROL PCB	1	015-AA000-00113
14.	LEVEL CONTROL SCREWS	3	352-CM03509D439

Modulus MSW-II TEST PROCEDURE



The operation of the Modulus MSW-II subwoofer, and the proper settings for the Room Adaptive Bass Optimization System, or R.A.B.O.S., is thoroughly covered in the Owner's guide, part# 406-000-00921.
For service purposes, the R.A.B.O.S. system is canceled when all three front panel controls (F) (L) (W) are turned fully CW (Clockwise), or if the R.A.B.O.S. On/Off switch is OFF. The only other control of concern is the Main Level Control on the front panel, which operates like a traditional potentiometer.

Equipment needed:

- Function/signal generator/sweep generator
- Integrated Amplifier
- Multimeter
- RCA cables; Speaker cables

General Unit Function (UUT = Unit Under Test)

Switch/Controls:
MAIN LEVEL control full clockwise (0)
LOW PASS FILTER switch OFF
R.A.B.O.S. On/Off switch OFF
PHASE button - either position
(3) R.A.B.O.S. controls – do not matter

1) From the signal generator, connect one line level (RCA) cable to the Input jacks (L/R) on the UUT. Use a Y-cable from a mono source if necessary to connect to both inputs.
2) Turn on generator; adjust to **150mV, 50 Hz**.
3) Plug AC power cord in UUT, turn power switch ON.
4) Red LED should ON (in the Level wheel at the front of the UUT). Turn up LEVEL control to full counterclockwise (10).
5) Green LED should ON; Bass response should be heard and felt from port tube opening.
6) Turn LEVEL control full clockwise (0). Turn power switch OFF.

Sweep Function

1) Follow steps 1-3 above, using a sweep generator as a signal source – adjust the generator to **100mV, 50 Hz**.
2) Sweep generator from 20Hz to 300Hz. Listen for any rattles, clicks, buzzes or any other noises. If any unusual noises are heard, test woofer according to the instructions below.

Driver Function

1) Remove woofer from the enclosure; (see exploded view on page 8).
2) Check DC resistance of woofer; it should be **3.5Ω** ±10%,
3) Connect a pair of speaker cables to woofer terminals. Cables should be connected to an integrated amplifier fed by a signal generator. Turn on generator and adjust so that speaker level output is **6.0V.**
4) Sweep generator from 20Hz to 1kHz. Listen to driver for any rubbing, buzzing, or other unusual noises.

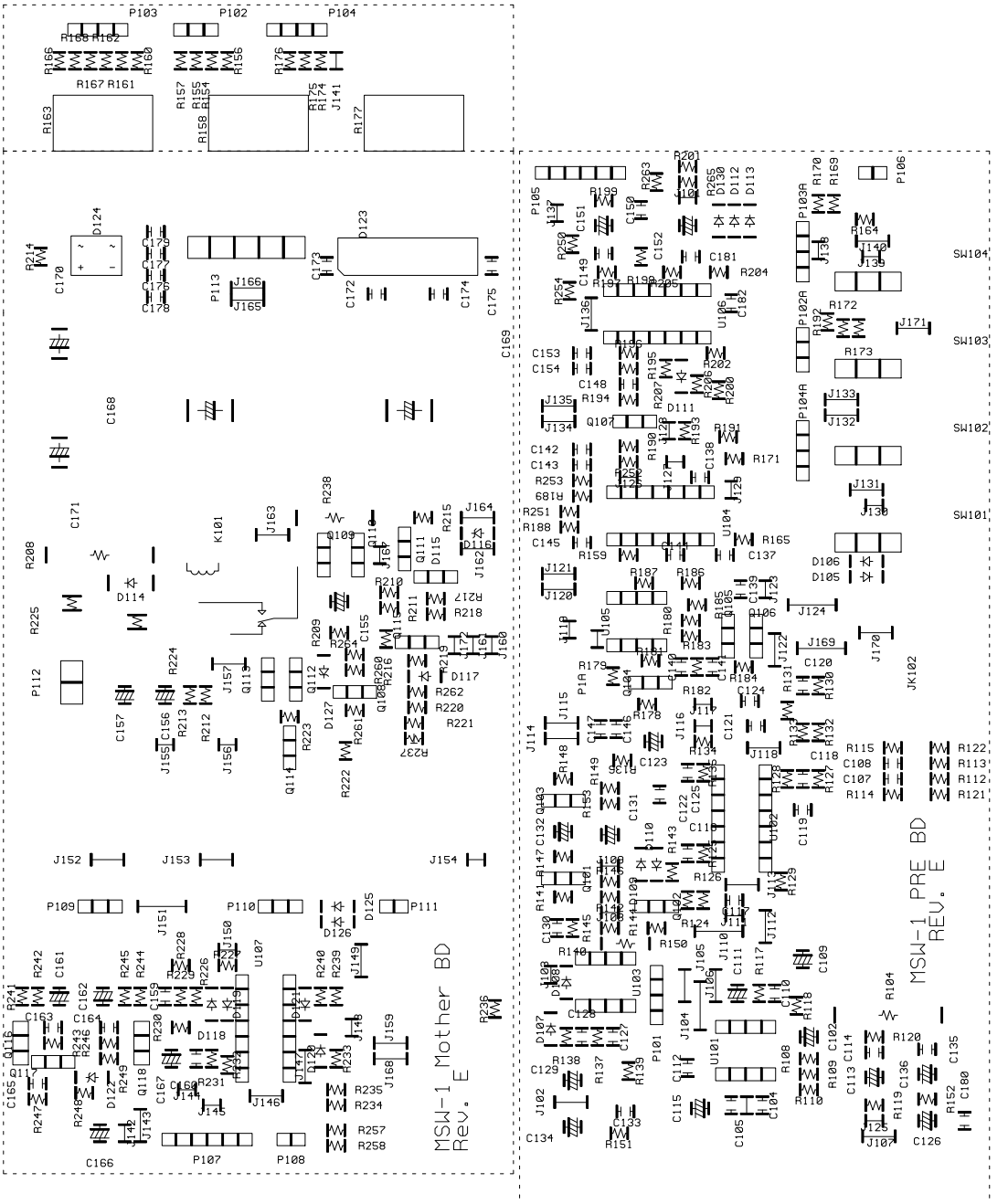
Modulus II Electrical Parts List			
Part Number	Description	Qty	Reference Designator
MAIN/POWER PCB			
Resistors			
110-16101j26	Resistor 100Ω 1/6W ± 5% 26mm	2	R241,244
110-16102j26	Resistor 1K 1/6W ± 5% CF 26mm	3	R210,329,264
110-16103j26	Resistor 10K 1/6W ± 5% CF 26mm	8	R227,229,230,231,232,233,260,261
110-16153j26	Resistor 15K 1/6W ± 5% CF 26mm	2	R247,249
110-16182j26	Resistor 1.8K 1/6W ± 5% CF 26mm	1	R248
110-16222j26	Resistor 2.2K 1/6W ± 5% CF 26mm	2	R242,245
110-16274j26	Resistor 270K 1/6W ± 5% CF 26mm	1	R240
110-16333j26	Resistor 33K 1/6W ± 5% CF 26mm	1	R211
110-16334j26	Resistor 330K 1/6W ± 5% CF 26mm	1	R209
110-16391j26	Resistor 390Ω1/6W ± 5% CF 26mm	2	R243,246
110-16472j26	Resistor 4.7K 1/6W ± 5% CF 26mm	4	R217,219,222,213
110-16473j26	Resistor 47K 1/6W ± 5% CF 26mm	1	R221
110-16683j26	Resistor 6 8K 1/6W ± 5% CF 26mm	1	R212
116-161002f26	metal film resistor 10K ± 1%MF 1/6W 25mm	4	R160,166,234,235
116-161103f26	metal film resistor 110K ± 1%MF 1/6W 26mm	1	R174
116-161301f26	metal film resistor 1.30K ± 1%MF 1/6W 26mm	3	R226,228,236
116-161502f26	metal film resistor 15.0K ± 1%MF 1/6W 26mm	2	R162,168
116-161822f26	metal film resistor 18.2K ± 1%MF 1/6W 26mm	1	R214
116-162001f26	metal film resistor 2.00K ± 1%MF 1/6W 26mm	1	R215
116-162492f26	metal film resistor 24.9K ± 1%MF 1/6W 26mm	2	R257,258
116-163571f26	metal film resistor 3.57K ± 1%MF 1/6W 26mm	1	R157
116-166813f26	metal film resistor 681K ± 1%MF 1/6W 26mm	1	R262
110-12621j15	Resistor 620Ω1/2W ± 5% CF 15mm	1	R238
110-20152j20	Resistor 1.5K 2W ± 5% CF 15mm	1	R208
113-500r1j10	cement 0.1Ω 5W ± 5%	2	R224,225
Capacitors			
130-2f104z503	disc capacitor 0.1U 50V +80/-20%	2	C163,164
130-ch101j503	disc capacitor 100P 50V ± 5%	2	C159,160
132-223ja03	mylay capacitor 0.022uF 100V ± 5%	8	C172,173,174,175,176,177,178,179
135-3107m16	electrolytic cap 100uF 16V ± 20%	2	C166,167
135-3226m50	electrolytic cap 22U 50V ± 20%	2	C161,162
135-3227m10	electrolytic cap 220U 10V ± 20%	2	C156,157
139-3227m16	electrolytic 220uF 16V ± 20%	1	C155
135-4228m35	electrolytic cap 2200uF 35V ± 20%	2	C170,171
135-4688m80	electrolytic cap 6800U 80V ± 20%	2	C168,169
Semiconductors			
190-161431clp1	IC TL431CLP	1	D115
192-027c1815gr	transistor 2SC1815GR	1	Q110,112,117
192-028a1015gr	transistor 2SA1015GR	3	Q111,113,115
192-1672n5551	transistor 2N5551	1	Q109
192-1682n5401	transistor 2N5401 AI-PNP 350V 500mA TO-92	1	Q108
197-031n4148	diode 100mA 75V SIGNAL 1N4148 ROHM	7	D117,118,119,120,121,125,126
199-15000565	zener diode 5.6V 1/2W 52mm	1	D116
199-15001505	zener diode 15V 1/2W 52mm	1	D122
199-15002005	zener diode 20V 1/2W 52mm	1	D129
190-161m324n	IC LM324N	1	U107
192-991d669a	transistor HI-SINCERITY HSD669A	1	Q116
192-992b649t	transistor HSB649T	1	Q118
197-00db103g	diode 1A 200V DF02M	1	D124
197-00kbu1003	diode 10A 200V KBU1003	1	D123
197-101n4002	diode 1N4002	1	D114

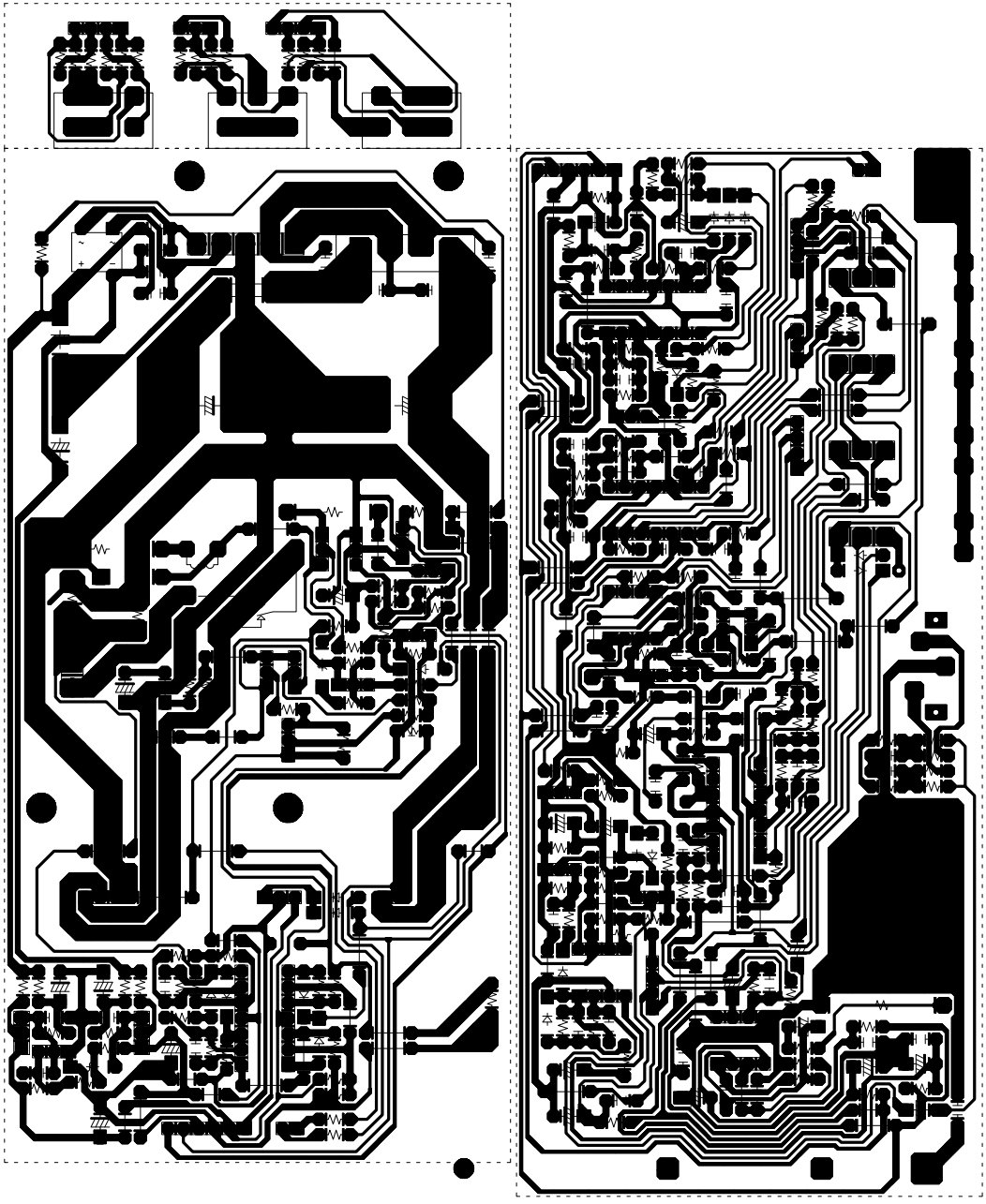
Part Number	Description	Qty	Reference Designator
Miscellaneous			
109-1tsc103j0	thermister TSC05103J	1	R237
162-10149001	wire ass'y 140mm AWG28	1	P107
171-udhss124d	relay 5A 24V UDH-SS124D	1	K101
175-1d02v01	wire connector 2PIN PITH=3.96mm	1	P112
175-1d05v01	wire connector 5PIN 3.96mm	1	P113
INPUT PCB			
Resistors			
110-14152j26	resistor 1.5K 1/4W ± 5% CF 26mm	1	R150
110-16101j26	resistor 100Ω 1/6W ± 5% CF 26mm	4	R112,113,151,152
110-16102j26	resistor 1K 1/6W ± 5% CF 26mm	1	R140
110-16103j26	resistor 10K 1/6W ± 5% CF 26mm	11	R263,118,126,129,133,136,146,149,191,196,199
110-16105j26	resistor 1M 1/6W ± 5% CF 26mm	2	R145,181
110-16106j26	resistor 10M 1/6W ± 5% CF 26mm	1	R186
110-16151j26	resistor 150Ω 1/6W ± 5% CF 26mm	1	R139
110-16154j26	resistor 150K 1/6W ± 5% CF 26mm	1	R138
110-16183j26	resistor 18K 1/6W ± 5% CF 26mm	1	R147
110-16203j26	resistor 20K 1/6W ± 5% CF 26mm	1	R200
110-16221j26	resistor 220Ω 1/6W ± 5% CF 26mm	2	R119,120
110-16223j26	resistor 22K 1/6W ± 5% CF 27mm	2	R141,148
110-16432j26	resistor 4.3K 1/6W ± 5% CF 27mm	1	R254
110-16472j26	resistor 4.7K 1/6W ± 5% CF 27mm	2	R144,250
110-16473j26	resistor 47K 1/6W ± 5% CF 27mm	1	R137
116-161001f26	metal film resistor 1K 1/6W ± 1% MF 26mm	3	R180,187,194
116-161002f26	metal film resistor 10K 1/6W ± 1% MF 26mm	8	R130,131,132,159,171,173,178,192
116-161052f26	metal film resistor 10.5K 1/6W ± 1% MF 26mm	1	R188
116-161210f26	metal film resistor 121Ω 1/6W ± 1% MF 26mm	1	R252
116-161301f26	metal film resistor 1.30K 1/6W ± 1% MF 26mm	1	R253
116-161303f26	metal film resistor 130K 1/6W ± 1% MF 26mm	1	R190
116-161504f26	metal film resistor 1.5M 1/6W ± 1% MF 26mm	1	R142
116-161693f26	metal film resistor 169K 1/6W ± 1% MF 26mm	1	R195
116-162001f26	metal film resistor 2.00K 1/6W ± 1% MF 26mm	1	R202
116-162052f26	metal film resistor 20.5K 1/6W ± 1% MF 26mm	2	R197,198
116-162211f26	metal film resistor 2.21K 1/6W ± 1% MF 26mm	1	R172
116-162212f26	metal film resistor 22.1K 1/6W ± 1% MF 26mm	3	R193,204,206
116-162322f26	metal film resistor 23.2K 1/6W ± 1% MF 26mm	4	R124,125,127,128
116-163162f26	metal film resistor 31.6K 1/6W ± 1% MF 26mm	1	R135
116-163400f26	metal film resistor 340Ω 1/6W ± 1% MF 26mm	1	R164,169
116-163923f26	metal film resistor 392K 1/6W ± 1% MF 26mm	1	R201
116-164021f26	metal film resistor 4.02K 1/6W ± 1% MF 26mm	1	R134
116-164320f26	metal film resistor 432Ω 1/6W ± 1% MF 26mm	1	R265
116-164750f26	metal film resistor 475Ω 1/6W ± 1% MF 26mm	1	R251
116-164751f26	metal film resistor 4.75K 1/6W ± 1% MF 26mm	5	R108,109,110,205,207
116-164752f26	metal film resistor 47.5K 1/6W ± 1% MF 26mm	2	R121,122
116-165111f26	metal film resistor 5.11K 1/6W ± 1% MF 26mm	1	R189
116-165623f26	metal film resistor 562K 1/6W MF 26mm	1	R117
116-166041f26	metal film resistor 6.04K 1/6W ± 1% MF 26mm	2	R165,170
116-166491f26	metal film resistor 6.49K 1/6W ± 1% MF 26mm	2	R114,115
116-169311f26	metal film resistor 9.31K 1/6W ± 1% MF 26mm	1	R179
116-201211f20	metal film resistor 1.21K 2W ± 1% MF 20mm	1	R104
Capacitors			
129-a104j633	metallize capacitor 0.1U 63V ± 5% MSC	6	C116,137,138,139,143,118
129-a223j633	metallize capacitor 0.022U 63V ± 5% MSC	1	C150
129-a473j633	metallize capacitor 0.047U 63V ± 5% MSC	4	C117,119,142,149
129-a474j633	metallize capacitor 0.47U 63V ± 5% MSC	2	C121,122
130-2b102k503	disc capacitor 1000P 50V ± 10%	3	C165,181,182
130-2b221k503	disc capacitor 220P 50V ± 10%	4	C105,107,108,128
130-2f104z503	disc capacitor 0.1U 50V +80/-20%	13	C112,114,124,125,130,133,135,144,145,146,147,153,154
130-3f473m503	disc capacitor 0.047U 50V ± 20%	1	C180

Part Number	Description	Qty	Reference Designator
130-sl101k503	disc capacitor 100P 50V SL ± 10%	3	C110,120,148
130-sl470k503	disc capacitor 47P 50V ± 10%	1	C127
135-3105m50	electrolytic 1U 50V ± 20%	1	C126
135-3106m50	electrolytic 10uF 50V ± 20%	4	C109,111,123,129
135-3107m16	electrolytic 100uF 16V ± 20%	5	C113,115,132,134,136
135-3107m25	electrolytic 100U 25V ± 20%	1	C152
135-3226m50	electrolytic 22U 50V ± 20%	1	C151
135-3475m50	electrolytic 4.7U 50V ± 20%	1	C102
139-3227m16	electrolytic 220uF 16V ± 20%	1	C131
Semiconductors			
192-027c1815gr	transistor 2SC1815GR	3	Q101,102,103
197-131n4148	diode 1N4148 26mm	7	D105,106,108,109,110,112,113
199-15000825	zener diode 8.2V 1/2W 52mm	1	D130
190-06m4558d	IC OPA 4558D	2	U101,103
190-161m324n	IC LM324N	1	U106
190-16tl1072n	IC TL072N @6.5	1	U105
190-16tl1074cn	IC TL074CN ST	2	U102,104
192-153mpf102	transistor FAIRCHILD MPF102	1	Q107
Miscellaneous			
174-0rcb202vag	RCA JACK RCA-209	1	JK102
175-1c02v01	wire connector 2PIN PITCH=2.5mm	2	P106,108
175-1c04v01	wire connector 4PIN PITCH=2.5mm	1	P101
175-1c06v01	wire connector 6PIN PITCH=2.5mm	1	P105
180-t000ts8l	switch L101 T2	3	SW102,103,104
RABOS CONTROL PCB			
110-16474j26	resistor 470K 1/6W ± 5% CF 27mm	1	R143
110-164r7j26	resistor 4.7Ω 1/6W ± 5% CF 26mm	1	R153
116-161000f26	metal film resistor 100Ω 1/6W ± 1% MF 26mm	1	R154
116-162671f26	metal film resistor 2.67K 1/6W ± 1% MF 26mm	1	R155
116-165400f26	metal film resistor 540Ω 1/6W ± 1% MF 26mm	1	R175
116-166800f26	metal film resistor 680Ω 1/6W ± 1% MF 26mm	1	R176
116-168250f26	metal film resistor 825Ω 1/6W ± 1% MF 26mm	2	R161,167
115-h103a203	variable resistor RV16A01-20-15K-A10K-3E	2	R158,177
115-h103c201	variable resistor RV16A01-20-15K-C10K-3E	1	R163
162-50150002	wire 150mm AWG26 BLCK	1	P102
162-50150003	wire 150mm AWG26 BLCK	2	P103,104
Power Amp Class D	**Module part# 051-A00444C01 RECOMMENDED: REPLACE ENTIRE MODULE**		
Resistors			
118-12061001j	SMD resistor 1.00K 1206 5%	1	R2
118-12061002j	SMD resistor 10.0K 1206 5%	6	R25,29,30,30B,7,9
118-120610r0j	SMD resistor 10.0Ω1206 5%	4	R20,20B,22,23
118-12062002j	SMD resistor 20.0K1206 5%	1	R26
118-12062201j	SMD resistor 2.20K 1206 5%	19	R6,13,16,31,33,34,35,36,37,38,39,40,41,42,43,44,45,46,32
118-12062204j	SMD resistor 2.20M 1206 5%	1	R4
118-12062701j	SMD resistor 2.70K 1206 5%	1	R10
118-12063000j	SMD resistor 300.0Ω 1206 5%	1	R24
118-12063301j	SMD resistor 3.30K 1206 5%	5	R1,14,15,27,28
118-12063902j	SMD resistor 39.0K 1206 5%	1	R3
118-12064700j	SMD resistor 470Ω 1206 5%	3	R8,11,21
118-12064701j	SMD resistor 4.70K 1206 5%	2	R5,12
Capacitors			
141-c0101k50	SMD capacitor 100pF 50V 10% 1206 NP0	1	C4
141-c0220k50	SMD capacitor 22pF 50V 10% 1206 SMT NP0	1	C5
141-c0561k50	SMD capacitor 560pF 50V 10% 1206 NP0	1	C6
141-c5104m50	SMD capacitor 1206 Y5V 0.1uF 50V ± 20%	8	C2,3,7,8,9,10,11,15

Part Number	Description	Qty	Reference Designator
141-c7223k50	SMD capacitor 0.022uF 50V 10% 1206 X7R	1	C13
141-d7104ka0	SMD capacitor 0.1uF 100V 10% 1206 X7R	4	C12,14,18,19
141-d7104ka5	SMD capacitor 0.1uF 250V 10% 1210 X7R	1	C20
132-105kb50	mylar capacitor 1uF 250V ± 10%	1	C40
128-e106ma01-s	non-polar 10uF 100V 20%	2	C16,17
Semiconductors			
190-16tl072dts	SMD I.C TL072CDT SGS THMSON	1	IC1
192-09124126qs	SMD transistor 2SC2412K-T146Q/R ROHM	2	Q1,4
192-09139066rs	SMD transistor 2SC3906K-T146R ROHM	2	Q2,8
192-091sc4672	SMD transistor 2SC4672(MPT3) ROHM	1	Q5B
192-09210376qs	SMD transistor 2SA1037K-T146Q/R ROHM	2	Q7,9
192-09215146rs	SMD transistor 2SA1514K-T146R ROHM	1	Q3
197-03rls4148s	SMD diode RLS4148-TE11 ROHM	8	D1,2,3,4,5,5B,6,20
199-15000563s	SMD zener diode 5.6V 5% PHILIPS BZX84-C5V6	2	Z1,2
199-15001203s	SMD zener diode 12V 5% PHILIPS BZX84-C12	4	Z3,4,5,6
192-232irf9640	transistor FET IRE9640 IR P-CH TO220	2	Q10,10B
192-233irf640	transistor FET IRE640 IR N-CH TO-220	1	Q11
192-1682n5401	transistor 2N5401K AI-PNP 350V 500mA TO-92	1	Q6B
Miscellaneous			
122-13151k0190	inductor CHOKE SA-500-280	1	L1
122-14300k4	inductor Ferrite core LD1215*300KU ± 10%	1	L2
175-9f40hr2	wire connector 40PIN PITCH=2.54mm HR2*40	0.2	
MISC/MECHANICAL			
150-r1107005	power transformer		
152-u602015	line cord SVT FT-26FT	1	
154-k31505t0	Fuse 3.15A 250V 30mm UL/CSA	1	
155-63032i	Fuse holder HTB-32I 30mm UL/CSA	1	
302-AL-05001-1	Alu plate 200*300*2.5t	1	
306-ABS-00180	Back cover	1	
310-ABS-00107	ABS £r11*14.25 black	1	
311-ABS-00028	KNOBS 46077-W soft P.V.C.	3	
333-EVA-00783	EVA W 198*12*2.0T	2	
333-EVA-00807	EVA L 274*12*2.0T	2	
333-EVA-00826	EVA W 198*12*1.0T	2	
333-EVA-00835	EVA L 274*12*1.0T	2	
335-NYL-00002	strain relief 4K-4 NO-BB	2	
350-EM04012D024	4F*12 screw	4	
351-AM03008A079	M3*8 screw	5	
351-HM04010A217	M4*10 screw	4	
352-AM03008D040	F3*8 B type screw	2	
352-AM03010D065	F3*10 P type screw	1	
361-FE-00002	Transformer holder 90*70*15mm	1	
362-CU-05000	M3*16.5H	2	
236-AL-05001	Alumium strip	1	
323-AL-05000	heat sink 1	1	
351-AM03008A078	M3*8 coating nickel	2	
351-HM03006A308	screw M3*6mm	1	
351-HM03018A307	Screw M3*18mm	2	
352-AM03008D041	F3*8 B type screw	2	
362-FE-00013	B brckt L TYPE t=1.6mm 89*9*1.6T	2	
351-AM03008A078	M3*8 screw	2	
165-50701xx01	wire assembly 700mm UL2464 #22 1 P108	1	
180-pspaw7az	PUSH SWITCH PS3-22SPA-W7AZ	1	
193-201612tr	Insulator T0-220 16mm*12mm	1	
193-201815t2	Insulator	1	
193-0s4211	silicon (INSULATION SPACER)42*11	1	
333-EVA-00220	EVA pad 225*15*1t UL	1	
333-SPG-00849	Sponge 330L*30W*5T	1	
335-NYL-00010	Wire holder 5P-4	1	

Part Number	Description	Qty	Reference Designator
162-10140002	UL/CSA 1617 #22 140mm BLACK	1	
176-wjce2	Terminal CE-2	1	
165-50400HH4	WIRING HARNESS (AMP-LEVEL POT)	1	
015-AA000-00113	LEVEL CONTROL PCB	1	
352-CM03509D439	LEVEL CONTROL SCREWS	3	

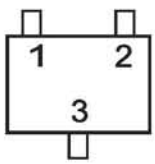

MSW-1 Mother BD
Rev. E
MSW-1 PRE BD
REV. E



Integrated Circuit/Transistor Diagrams

2SC2412K, 2SC3906K,
2SC4672,2SA1037K,
2SA1514

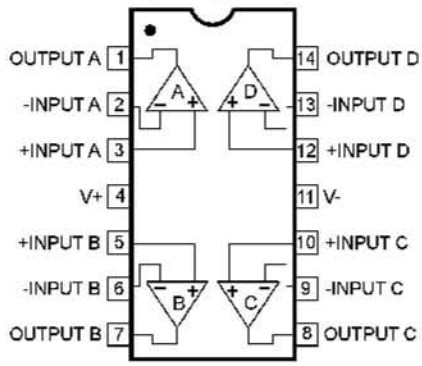
Q1-4,5B,7,8,9



1) Emitter
2) Base
3) Collector

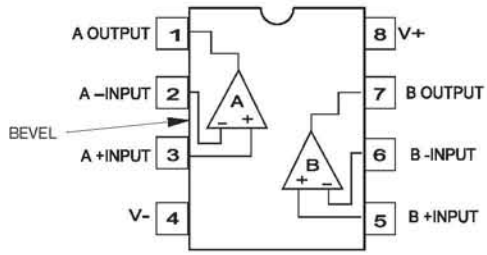
* PREFIX MAY BE "FMMT"

OPAMP, QUAD
14P DIL TLO74, LM324
U102,104,106,107

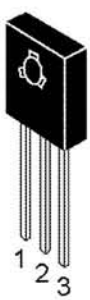


OPAMP, DUAL
TL072, 4558

U101,103,105,IC1

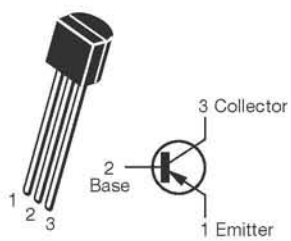


HSD669A, HSB649T
Q116,118

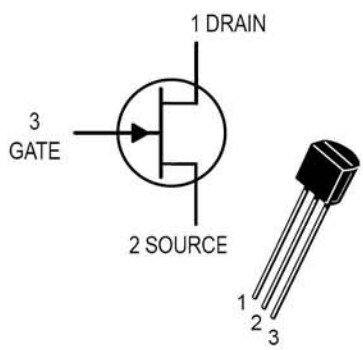


1. Emitter
2. Collector
3. Base

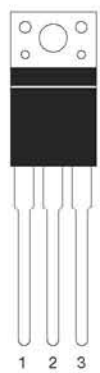
2N5401
Q6B,108



MPF102
Q107

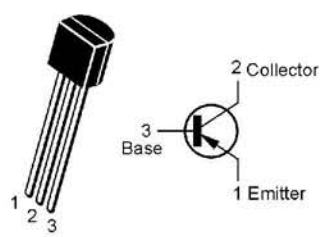


MOSFET
IRF640,9640
Q10,10B,11

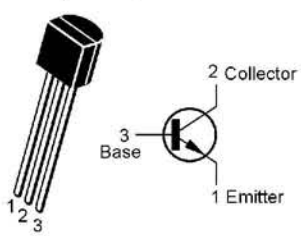


1. G
2. D
3. S

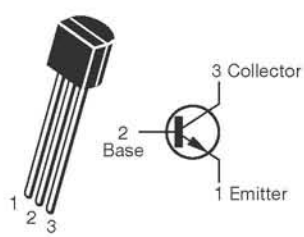
2SA1015
Q111,113,115

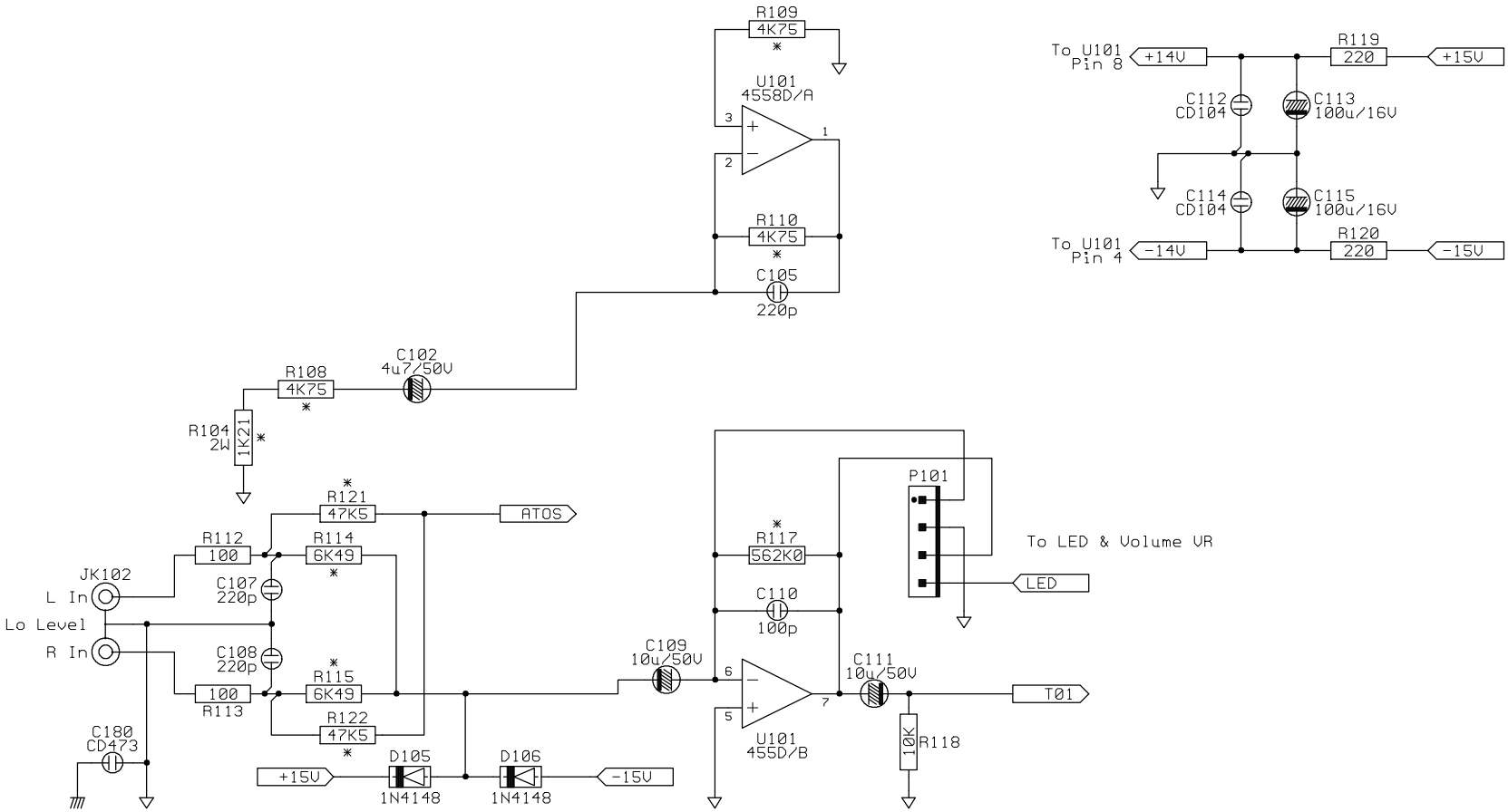


2SC1815
Q101,102,103,110,
112,114,117



2N5551
Q109





APPROVE BY	CHECK BY	DRAWING BY	PRE BD	
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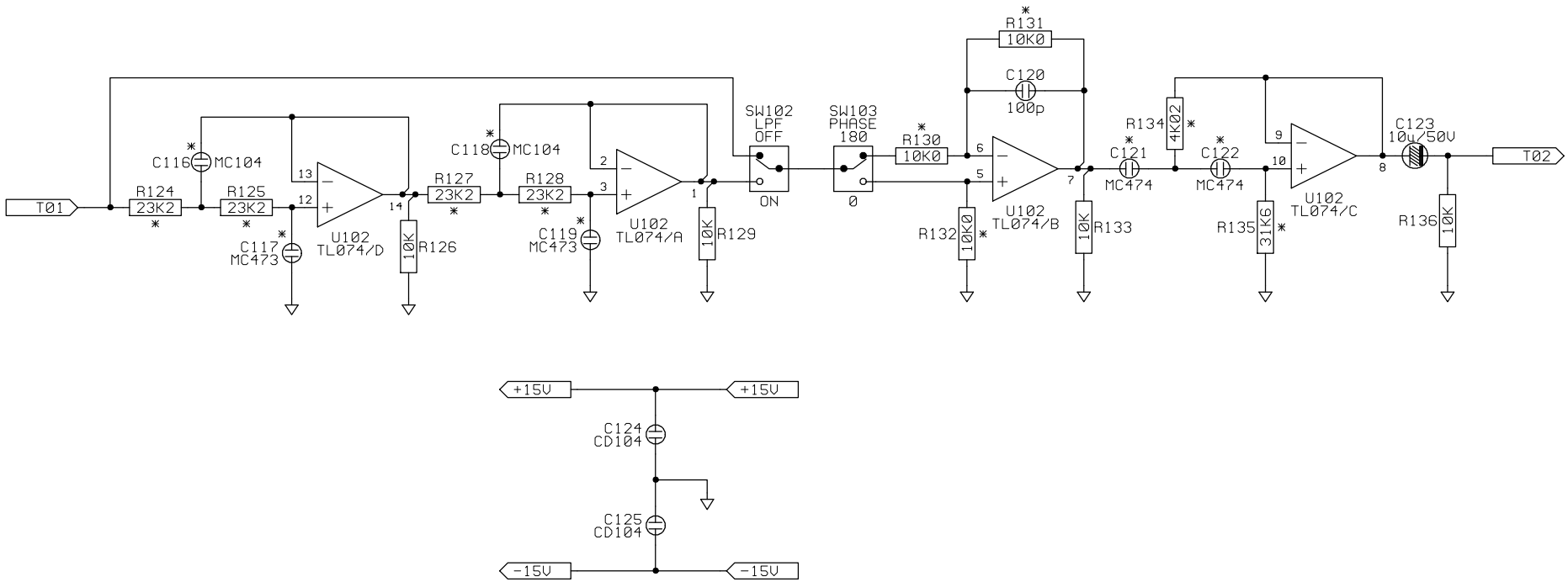
			MODEL: MSW-1	REV:X0
			CUSTOMER: Infinity	
			DATE : 2004-03-23	



APPROVE BY	CHECK BY	DRAWING BY	PRE BD	
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			CUSTOMER: Infinity	
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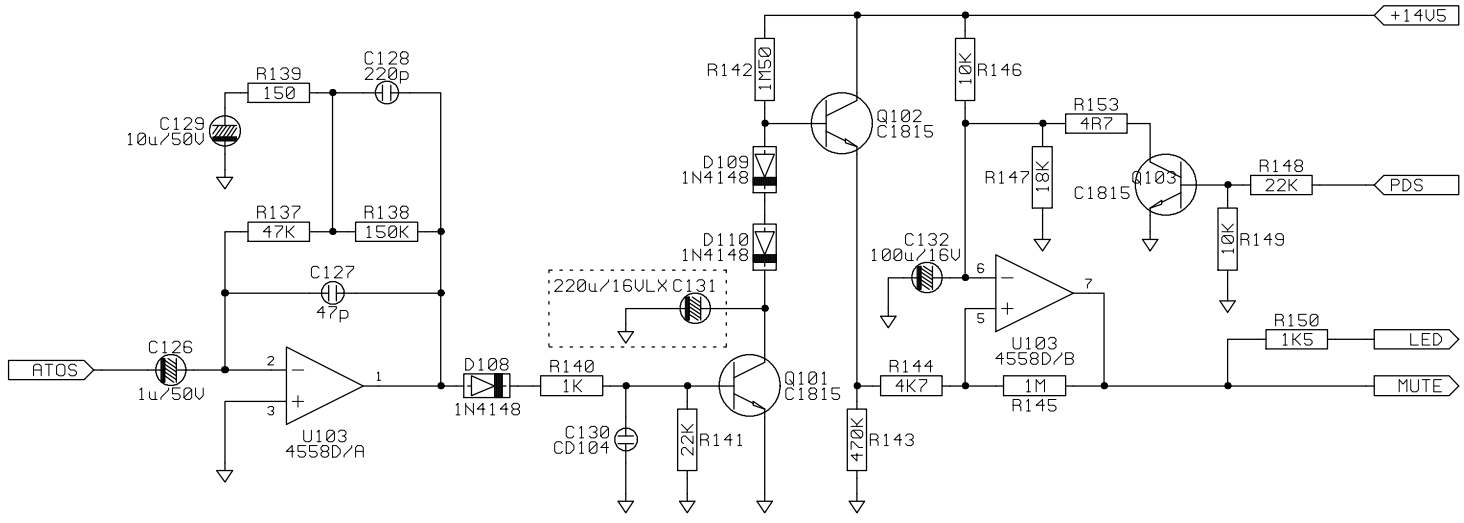

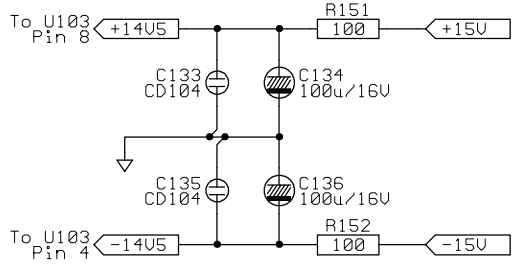

APPROVE BY	CHECK BY	DRAWING BY	PRE BD	
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			CUSTOMER: Infinity	
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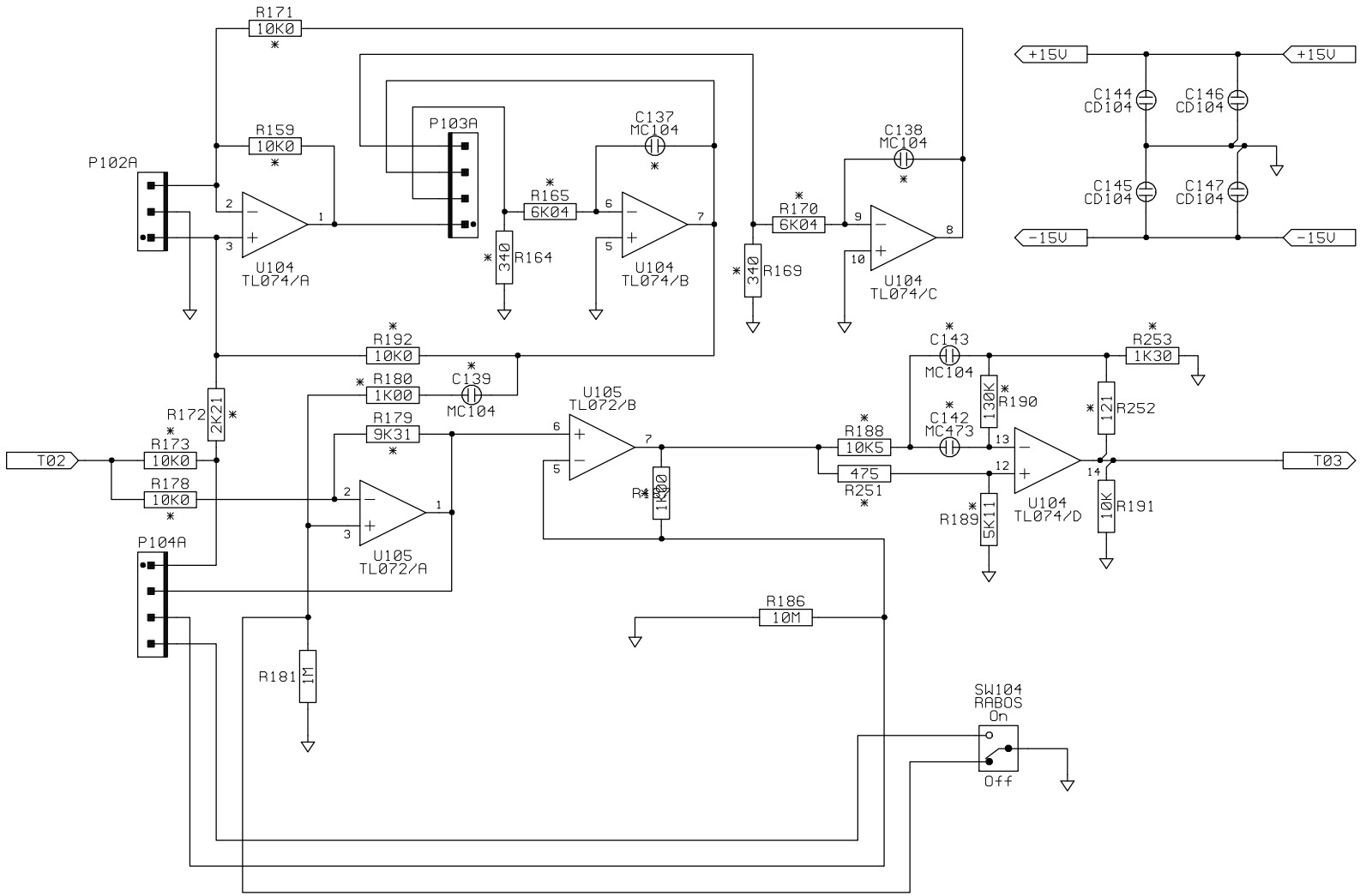

APPROVE BY	CHECK BY	DRAWING BY	PRE BD	
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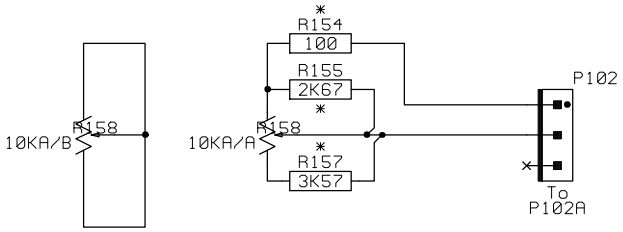
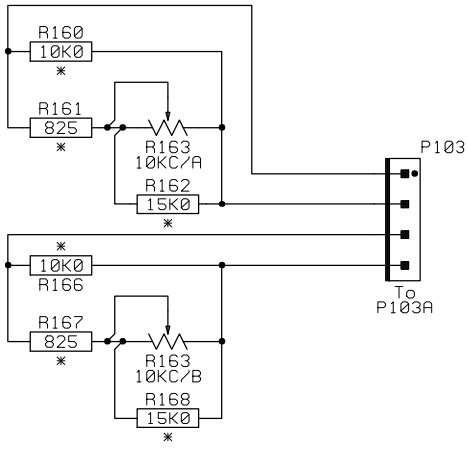
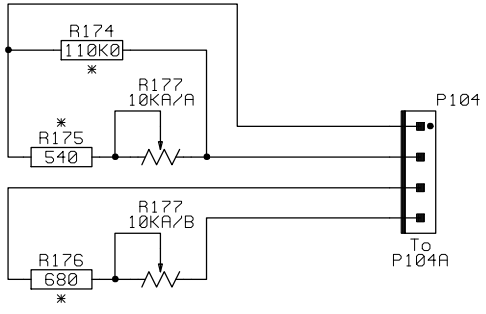
			MODEL: MSW-1	REV:X0
			CUSTOMER: Infinity	
			DATE : 2004-03-23	







APPROVE BY	CHECK BY	DRAWING BY	RABOS BD	
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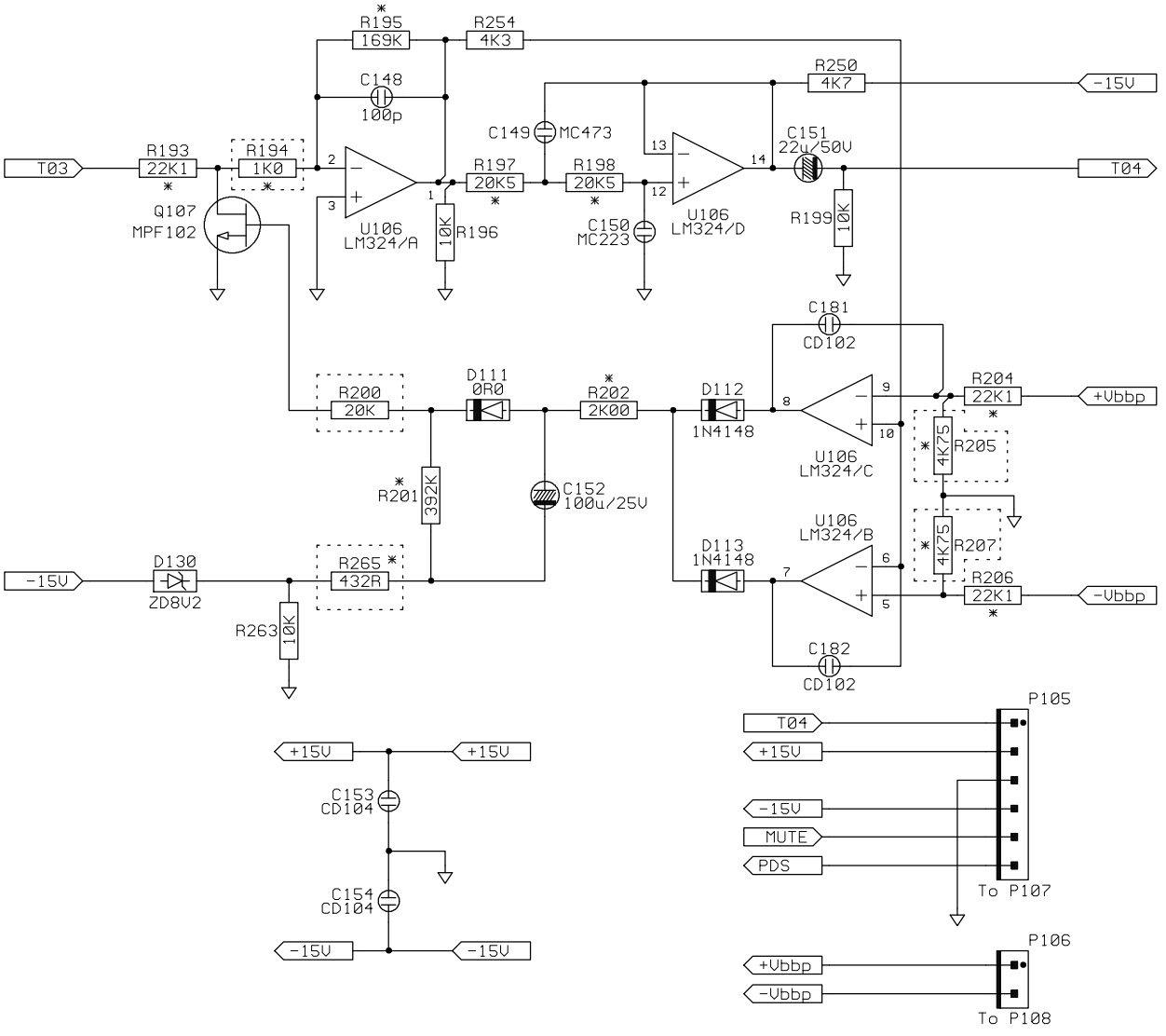
			MODEL: MSW-1	REV:X0
			CUSTOMER: Infinity	
			DATE : 2003- 5-23	



APPROVE BY	CHECK BY	DRAWING BY	PRE BD	
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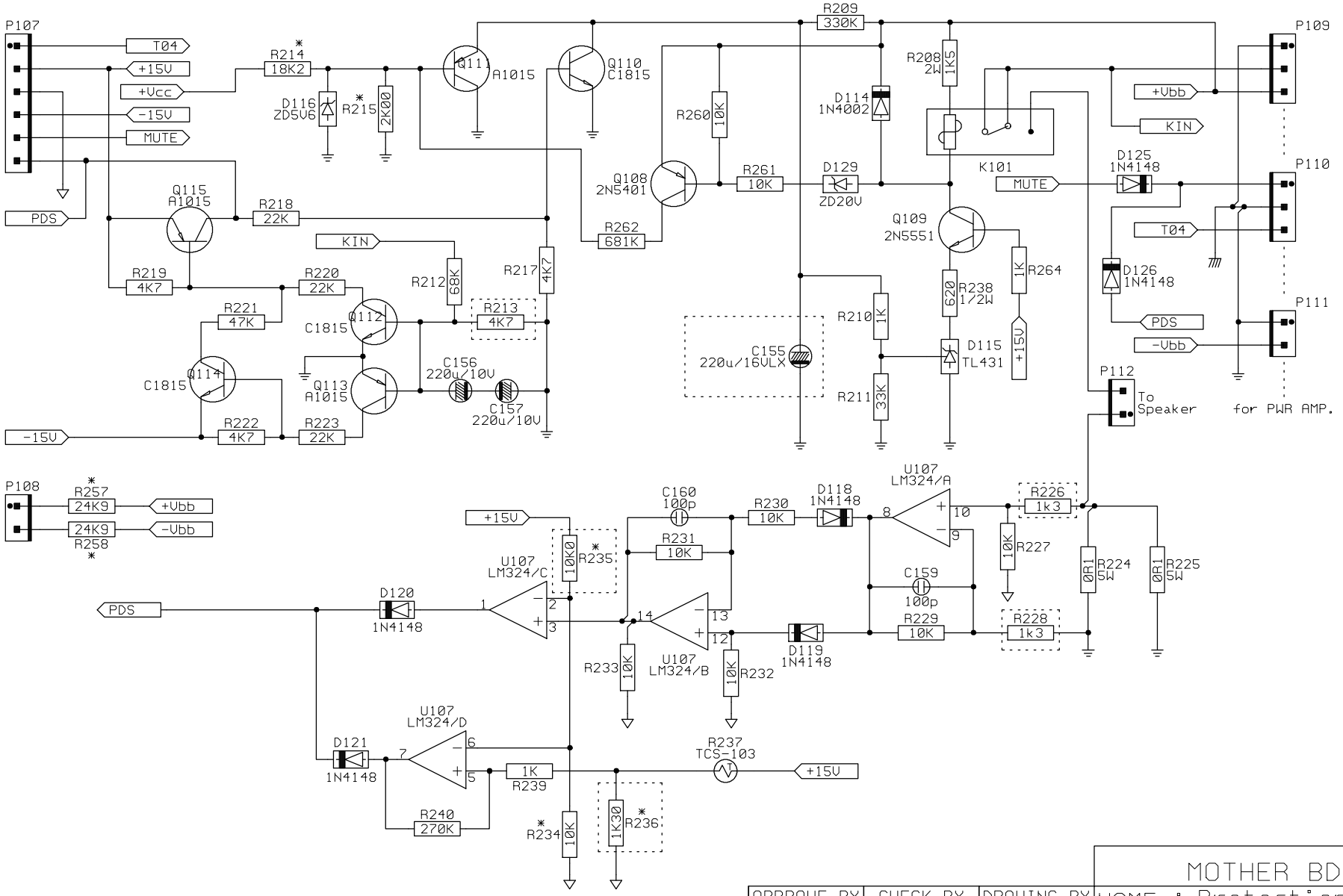
			CUSTOMER: Infinity	
			DATE : 2003- 5-23	



APPROVE BY	CHECK BY	DRAWING BY	MOTHER BD	
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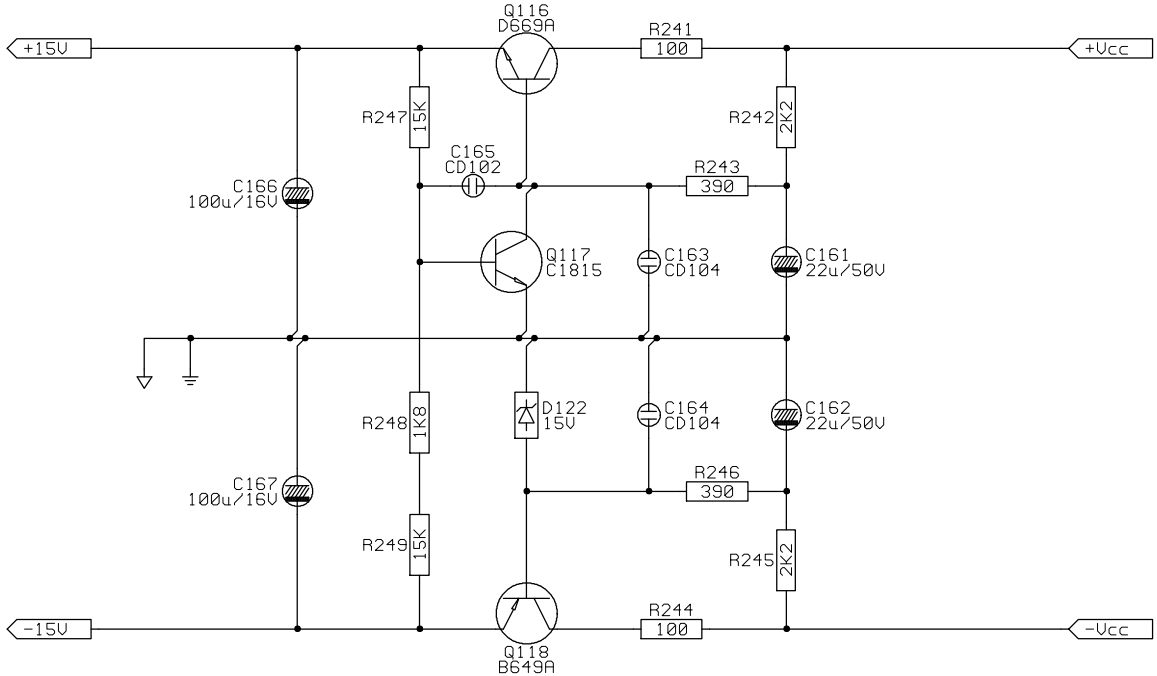
			MODEL: MSW-1	REV:X0
			CUSTOMER: Infinity	
			DATE : 2004-03-23	



APPROVE BY	CHECK BY	DRAWING BY	MOTHER BD	
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			MODEL: MSW-1	REV:X0
			CUSTOMER: Infinity	
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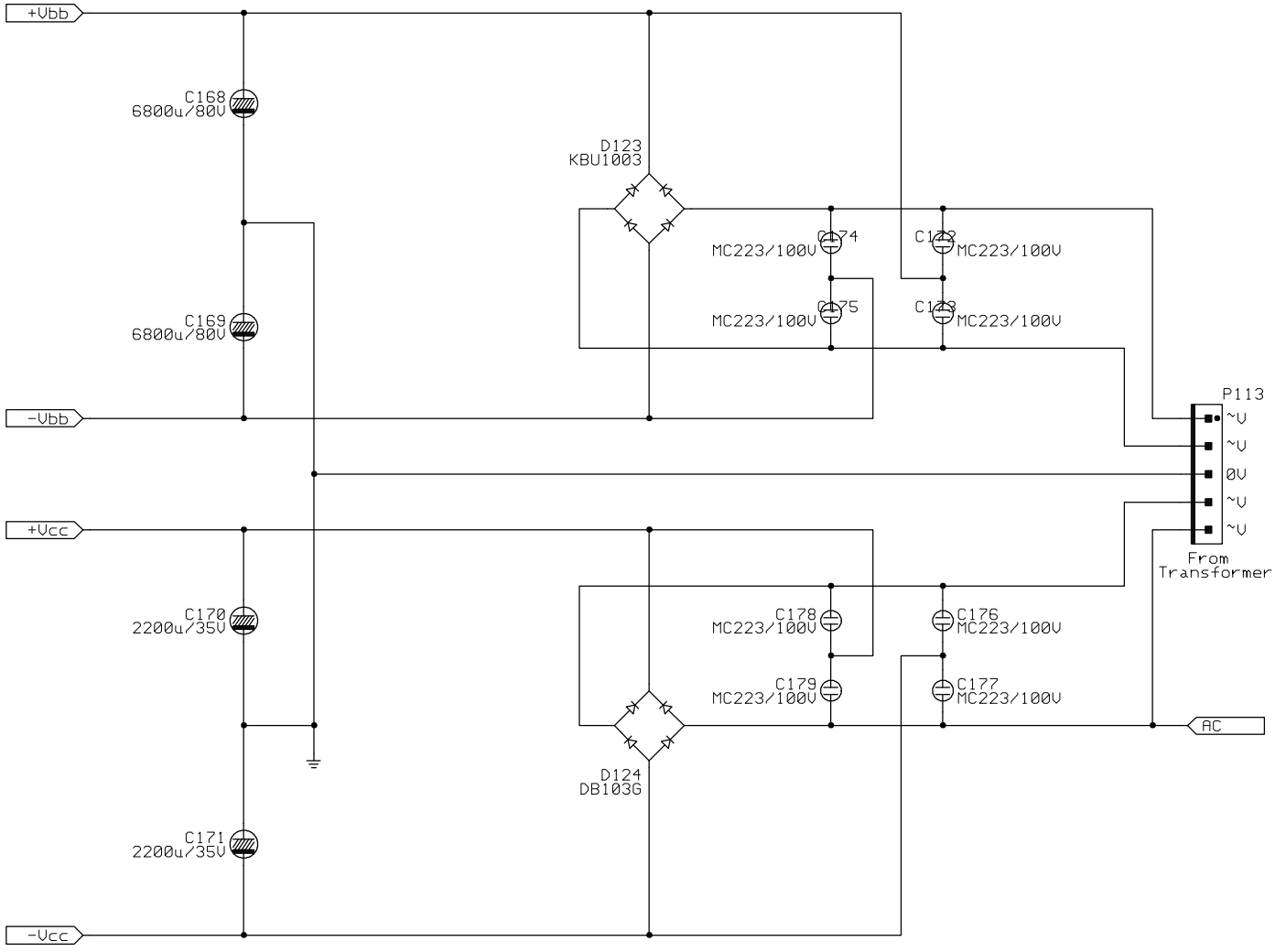

APPROVE BY	CHECK BY	DRAWING BY	MOTHER BD	
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			CUSTOMER: Infinity	
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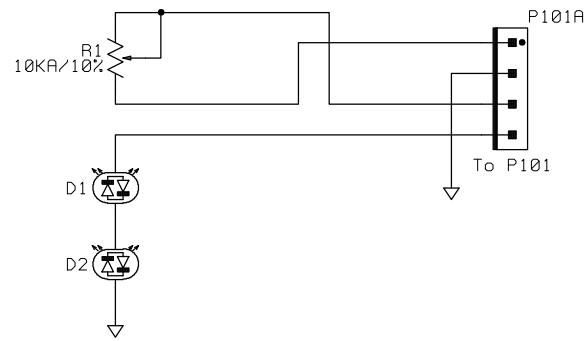

APPROVE BY	CHECK BY	DRAWING BY	NAME : Vol. CTRL	10/12
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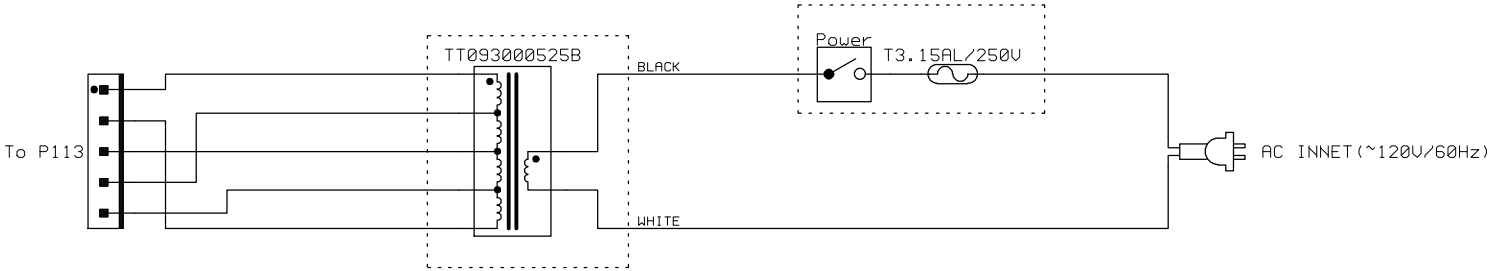
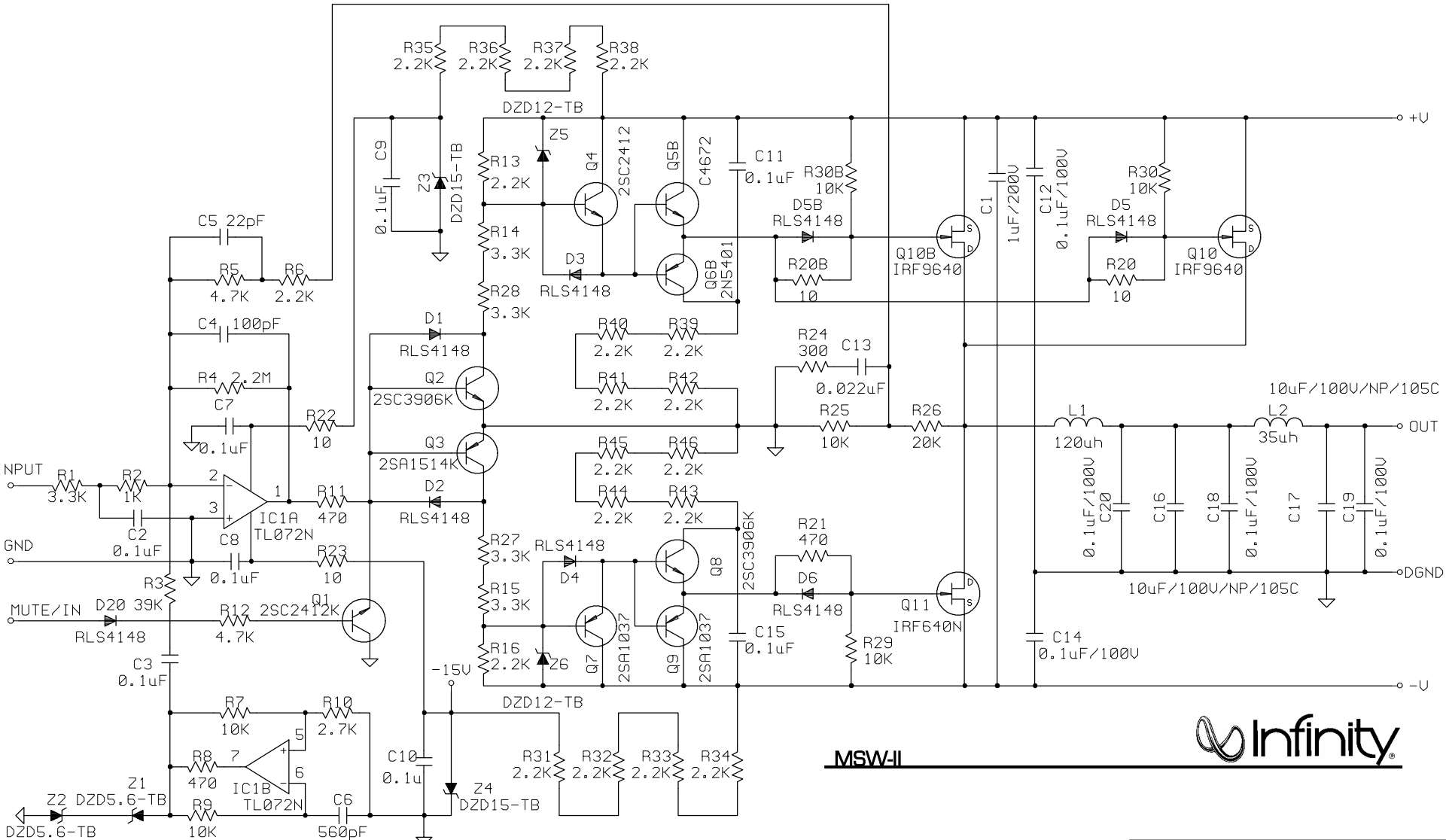
			CUSTOMER: Infinity	
			DATE : 2003- 5-23	



APPROVE BY	CHECK BY	DRAWING BY	NAME : AC INNET	11/12
			MODEL: MSW-1	REV:X0
			CUSTOMER: Infinity	
			DATE : 2003- 5-23	



APPROVE BY	CHECK BY	DRAWING BY	CLASS D AMP BD	
			NAME : CLASS D AMP	12/12
			MODEL: MSW-1	REV:X0
			CUSTOMER: Infinity	
			DATE : 2004-03-23	

Modulus II
Packaging

406-000-00921 (OWNER'S MANUAL) & 405-000-00328 (WARRANTY CARD)
POSITIONED ON THE TOP OF INNER CARTON